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AUTHOR Anderson, Kristine L.
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ABSTRACT

The effects of the nature of the college/university on students' academic persistence and attainment, achievement goals, and occupational attainment were studied. Students entering academic programs at two- or four-year colleges by fall 1974 were studied using findings of the National Longitudinal Study of the High School Class of 1972. College/university variables included college control and level, gender and ethnic composition, socioeconomic (SES) composition, degree of selectivity, percent of students at the graduate level, and tuition/fees cost per year. The analyses controlled for the influence of individual student variables that might account for college effects. In general, more academically selective, smaller, less vocationally-oriented colleges, with high levels of structural integration had positive effects on student attainment. In addition, colleges with larger proportions of low SES and minority students (which seem to be private four-year colleges) had generally positive effects, partly through more lenient grading standards that encourage persistence of students. Two-year colleges had the most negative effects on student educational attainment. Twelve statistical tables and a seven-page bibliography are appended. (Author/SW)

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Institutional Differences in College Effects

N.I.E. Grant NIE-G-82-0035

Final Report

Kristine L. Anderson
Department of Sociology and Social Psychology
Florida Atlantic University
Boca Raton Florida 33431

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ABSTRACT

This study makes use of a longitudinal survey of students who were high school seniors in 1972 (National Longitudinal Study of the High School Class of 1972), including only those who entered an academic program in a two- or four-year college by Fall, 1974. By merging with the individual survey data information on the institutions of higher education they attended in their first year, analyses could be done to examine the effects of the nature of the college/university attended on educational attainment, achievement goals, and occupational attainment -- net of relevant individual predictors (such as social status, academic preparation, and early goal levels). Two sets of college/university variables are utilized. The first is a set of categories based on control (private/public), and level (university, four-year college, two-year college). The second includes measures of more specific dimensions of institutions, including ability, Socio-economic status, gender and ethnic composition; percent of students who are at the graduate level; percent of major areas that are vocational (i.e., not liberal arts/sciences); percent of students who live on-campus and who are not full-time students; size of enrollment (graduate and undergraduate combined); expenditures (general and educational) per student; and tuition/fees cost per year. The analyses control for the effects of individual work, residence, full versus part-time attendance, and marital status during the first years of college. A set of factors that might account for any effects of higher education characteristics is also included. It includes measures of early academic performance in college, contact with faculty members, and general feelings of satisfaction with college life. The analyses indicate that institutions do vary widely in educational outcomes (and to a lesser extent occupational outcomes), but that much of this between-institution variation can be traced to differences in the students who enter varying kinds of colleges, and to their greater or lesser involvement with the student role during the early years of college. However, some significant effects of institutions do exist, net of individual selection/recruitment/involvement factors. In general, more academically selective, smaller, less vocationally oriented colleges, with high levels of structural integration have positive effects on student attainment. In addition, colleges with larger proportions of low SES and minority students (which seem to be private four-year colleges)have generally positive effects, partly through more lenient grading standards which encourage persistence of students. Expenditures per se (a frequently used measure of "quality" of colleges) did not have overall positive effects on student attainment. Two-year colleges, as has been noted in a number of other studies, had the most negative effects on student educational attainment.

Introduction

One of the major developments in postsecondary education has been the increasing number and diversity of types of institutions. As a nearly "mass" form of higher education has evolved, with a majority of high school graduates eventually continuing to some form of higher education, there has been a corresponding increase in the diversity of institutions, in order to accomodate the greater variation in student background, skills and goals (Trow, 1961). Increases have been strongest in vocational/technical schools, two-year community/junior colleges, and in less selective public colleges. Corresponding increases in the diversity of students in postsecondary education are also evident, with an increasing number of lower SES, minority, female, and older students. An increasing number of students also work full or part-time, commute to campus, are married, and are enrolled only part-time.

This expansion and increase in the diversity of institutions is sometimes cited as evidence of increasing opportunity for social mobility, especially for lower SES and minority youth. It is clear that many students who would not have continued their education beyond high school in previous generations are now able to do so. However, this does not necessarily imply that there has been an increase in equal opportunity. Just as the development of mass secondary education led to hierarchical differentiation within secondary schools, the development of "mass" higher education has not meant simply the expansion of the number of traditionally structured colleges and universities. Instead, there has been hierarchical differentiation, as new types of institutions developed and others grew or declined. A number of studies confirm that the simple expansion of higher education is quite consistent with little or no change in rates of social mobility for students (Mare, 1981; Bowles, 1972). It is not only the distribution of education that affects social mobility, but the allocation of students to different forms of higher education, and the consequences of that allocation for progress in the educational "contest" and for later occupational attainment. Higher education may act simply to maintain or strengthen the effects of ascriptive statuses on status attainment of entrants. The variety of institutions available to students may only be a sign of "submerged class conflict" (Karabel, 1972; Bowles and Gintis, 1976). Thus an important question for research is whether entry into different kinds of postsecondary institutions does have an impact on students' educational and occupational achievements, independent of confounding factors of differential selection/recruitment of students into schools. A second corresponding question is whether there is differential selection into these varying institutional types based on ascriptive statuses. This study examines the effects of various institutional types and their organizational features on students entering higher education in the early 1970's — a time of rapid growth, especially in the public sphere.

Review of Literature

Most of the more sophisticated studies of college effects have found that about half of the total association of college variables with student attainments can be attributed to differences between students selected/recruited into different kinds of colleges (Astin and Panos, 1969; Kamens, 1971; Wegner and Sewell, 1970; Alwin, 1976). Controls for socioeconomic status and academic ability seem particularly necessary, since they are related to entry to two-year versus four-year colleges, to college selectivity, and to public versus private control (Folger, Astin and Bayer, 1970; Peng, Bailey and Eckland, 1977; Alwin, 1974; Alexander and Eckland, 1977). Despite controls for these factors , most studies have found small remaining effects of college characteristics. Studies examining all entering

students (rather than graduates only - a common failing of older studies), have found consistent effects of college variables on rates of attrition (Folger et al., 1970; Astin, 1975,1977). As one might expect, this also results in college effects on the likelihood of education beyond the bachelor's degree (Spaeth, 1968; Alexander and Eckland, 1977). Some evidence has also been found of effects of colleges on occupational status and earnings in later years (Solmon and Wachtel, 1975; Sewell and Hauser, 1975; Spaeth, 1970).

Assessing the consequences of diversity in higher educational institutions requires, of course, the specification of those dimensions on which between-institution variation "makes a difference". A number of different approaches to determining these dimensions have been used. These approaches can be classified into three groups: (1) use of typologies of conventional institutional types (e.g., universities, four-year colleges, two-year colleges; public, religious, other private); (2) variables based on aggregated student behaviors, attitudes or perceptions (e.g., average liberalism; average contact with faculty); and (3) organizational variables (e.g., size, selectivity).

A brief summary of literature using each approach is presented to indicate the rationale for the strategy used in this study.

Institutional typologies. Little consistency is found in the specific typologies of institutions used by different researchers, though almost all are based on combinations of control, highest degree, and curricular offerings. For example, much of Astin's work (Astin and Panos, 1969 ; Astin, 1975,1977) uses typologies, based on degree, curriculum, and control. Wegner and Sewell (1970) and Alwin (1974), using data on Wisconsin high school graduates, have used a typology specific to that state, with some categories corresponding to single Wisconsin institutions, and others to groups of institutions based on control, degree and curriculum. Both Pace's work (1974) and that of the Carnegie Commission on Higher Education (e.g., Carnegie Commission on Higher Education, 1974) uses an extended typology based on combinations of degree, curriculum, and selectivity. For example, they differentiate between selectivity and unselective liberal arts, selective and general universities. The Carnegie typology is also subdivided by public versus private control in some work.

This approach is valuable in some ways. First, much of the process by which students select colleges seems likely to be based on such fundamental distinctions as control, curriculum, and degree structure. Second, the distinctions between community colleges, four-year liberal arts, four-year universities, etc., also seem important because these institutional types vary simultaneously on many organizational characteristics. Third, these institutional types do have significant effects on student outcomes. The primary category found to positively affect persistence, graduation, and even income, is that of liberal arts curriculum (Astin and Panos, 1969; Alwin, 1974; Solmon and Wachtel, 1975). Private, including religious, colleges also have somewhat higher persistence and graduation rates, and superior occupational prestige of graduates (Astin and Panos, 1969; Alwin, 1974; Thomas, 1981; Trent and Medsker, 1968). Also, four-year colleges have positive effects on attainments compared to two-year colleges (Anderson, 1981; Folger, Astin and Bayer, 1970; Astin, 1971). Finally, selective universities (public and private) seem to have higher persistence and graduation rates, and higher income for graduates than "comprehensive" four-year state colleges or general liberal arts colleges (Solmon and Wachtel, 1975 ; Wegner and Sewell, 1970).

Aggregated student response approaches. The most common approach using aggregated individual responses is that of the several related "college environment" or "environmental press" scales originally derived from Stern's College Characteristics Index (CCI) (Stern, 1970). Using 300 CCI items on student perceptions of their college, Stern used factor analysis to derive eleven first-order and five second- order "press" factors, though he then tended to focus on only an "intellectual" and an "emotional dependency" factor. Using both "need" (individual self-reports of behavior/attitudes) and "press" items, he found five second-order factors (expressive, intellectual, protective, vocational, collegiate). These factors or ones similar in nature have been used in many studies. Pace's related College and University Environment Scale (CUES), used 150 CCI items and leads to factors of practicality, awareness, propriety, community, and scholarship factors(Pace, 1969. Astin (1968) finds six factors: realistic, intellectual, social, conventional, enterprisingg, and artistic. Astin and Holland (1961) cite factors of intellectualism, aestheticism, status, leadership, masculinity, and pragmatism. Astin and Panos(1969) include eleven factors : organized dating, drinking, student employment, independence, cohesiveness, informal dating, career indecision, permissiveness, concern for students, academic competitiveness, and femininity.

Most studies of the effects of such variables concentrate on the "fit" or congruence of individual personality and environmental press. This fit or lack of it does not seem to be an important determinant of socio-economic attainment, though it does affect decisions to persist at a particular college (Pace and Stern, 1958; Pace, 1962; Stern, 1963). The approach has been criticized for many reasons, especially when aggregated perceptions of college environments have been used. The average has been termed an artificial construct, especially in large colleges, where perceptions are more likely determined by particular subenvironments. Use of perceptions as a proxy for institutional characteristics assumes student accuracy, when they may actually report rumor or stereotypes. In addition, the items included are a strange mixture, chosen more on the basis of psychological theories of individual adaptation or needs, than on sociological theories of effects of organizations. However, some of the factors which emerge do seem to correspond to organizational dimensions. For example, "community". "cohesiveness", "protective" revolve around a sense of interpersonal closeness, which probably derives from structural factors like size and residentiality. The common "intellectual" or "scholarship" factor probably corresponds in part to organizational policies about selectivity in admission, and curricular requirements. Use of aggregate responses rather than organizational variables also brings with it the problem of assessing the distinction between true college effects and effects simple due to differing individual student composition. Separating effects of the two processes requires availability of both individual and group average responses for use in analysis. This has not been met in many studies.

Thus to a sociologist, it seems more legitimate to focus on the organizational variables themselves — either with direct measures, or where necessary with proxy measures derived from aggregating individual-level variables. However, with the latter, it is crucial to try to separate the true contextual effects from simple compositional differences.

Quite a bit of research on the effects of organizational/contextual variables does exist. The most commonly used factor is that of selectivity (or ability composition). Numerous studies have established that students in more selective institutions, controlling individual ability, receive lower

grades, but are higher in persistence, graduation, entry to graduate school, and achievement goals. For later occupational/income attainments, evidence seems to show that selectivity is more important in higher status occupational groups (Tinto, 1977; Perucci and Perucci, 1970). Another commonly examined factor is one generally termed "quality". While it is sometimes used interchangeably with selectivity, most researchers use "quality" to refer to quantity or nature of certain educational resources. Indicators have included percent of faculty with doctoral degrees, income or expenditures per student, library books per student, faculty-student ratios, research grant income, and faculty salaries. Studies have been inconsistent, but some have found small positive effects of quality (or affluence) on educational and occupational outcomes (Kamens, 1967; Kamens, 1971; Astin, 1962; Astin and Panos, 1969; Wegner, 1967; Rock, Centra and Linn, 1970 ;Solmon , 1973 ; Alwin, 1974). While a number of other organizational features have been cited as theoretically important, few other variables have received adequate attention in research. A few have examined the effects of size, but results are not consistent. Astin and Panos (1969) and Rock, Centra and Linn (1970) generally find size to be inversely associated with socio-economic attainments (though Rock, Centra and Linn note that only where income per student is high are small colleges higher in attainments than large colleges). However, Kamens (1971) and Thomas (1981) report no such advantage for small colleges. Astin (1977) found positive effects of size on salaries of graduates who became teachers, and on learning of technical skills (like computer use), but negative effects on general cultural knowledge, student-faculty relations, student satisfaction (in most areas), and involvement in college life and extracurricular activities.

A related factor is that of cohesion of the faculty/peer environment. Astin and Panos (1969) and Astin (1977) report positive effects of cohesion on persistence, while Solmon (1973) reports positive effects of faculty/student ratios and income of students. Astin and Panos (1969) also report that colleges with high rates of student employment (perhaps an indicator of low cohesion) have lower persistence and attainment.

Despite the lack of research, theoretical statements do provide some suggestions which might allow integration and extension of these organizational variables.

First, it is necessary to assess the relevance of possible variations to socio-economic attainments. It is clear from previous research that many factors have significant effects only on specific outcomes. For example, college religious affiliation affects certain moral values and religious participation (Pace,1972). Therefore, we should try to isolate only those dimensions most likely to affect such outcomes as academic performance, plans for further education, and achievement goals. While factors such as psychological fit may be important for persistence in a particular school, they do not generally seem important for overall educational and occupational attainment.

Kamens (1971) suggests that institutions which believe they produce special leadership or corporate elites (such as prestigious universities, or wealthy liberal arts schools), are more likely to maintain certain organizational features which may actually affect student attainment. These features include: selection rituals at entry and early in the college career; residentiality; small size and low complexity (at the undergraduate level); a focus on a broad, common liberal arts curriculum, with low vocationalism and specialization; single sex composition; and rural, isolated location.

Socio-economic composition, as an indicator of the typical occupational

destination and origin of students, has also been discussed in conflict theory descriptions of the educational system. High SES institutions are described as institutions designed to ensure the tracking of their students into educational success and elite occupations, while institutions for lower SES students are designed to fail large numbers of students, and track them into less prestigious, lower paying occupational slots (Karabel, 1972; Bowles and Gintis, 1976; Collins, 1971).

Feldman notes the importance of exaining such social organization dimensions as control, status, goals, bureaucracy/complexity, density and cohesiveness. Astin (1962) also focuses on size and curricular variety, homogeneity (percent of students concentrated in a few major fields), and a "realistic"/technical emphasis rather than intellectual orientation, as well as general affluence in resources.

From these diverse theoretical statements, a number of potentially important organizational dimensions emerge rather consistently:

1. predominant goals/objectives of institutions
2. ability composition/selectivity
3. SES (and ethnic) composition
4. size and diversity or "bureaucratization"
5. cohesiveness/integration

In addition, basic institutional type seems important as socially meaningful categories that vary on all of the above dimensions. These can be seen as a set of causally prior variables whose effects are explained by specific organizational variables.

A Causal Model of College Effects.

Despite advances in samples and analyses, a number of common flaws in research on college effects can be found. First, a number of studies exclude non-graduates. This clearly ignores the importance of differential attrition rates between colleges. Second, many studies use the last college attended rather than the first. While both can provide useful information, studying last college only ignores effects of first colleges attended on students careers, and may lead to confusion in causal ordering. Third, many studies have excluded students who attended graduate/professional schools (Alwin, 1974). This can lead to a lack of attention to the effects of undergraduate colleges on decisions to get further education, and to underestimation of college effects on occupational status. Fourth, most studies have excluded two-year colleges, even though they are a rapidly expanding part of our educational system.

Finally, studies have been characterized by a lack of theoretical development. This is seen in many aspects of college effect studies. Researchers have been overly concerned with whether an arbitrarily chosen set of college variables does or does not have net effects on students. These studies tend, as seen above, to either use a single measure assumed to correspond to "quality", or to use a large number of indicators of unspecified dimensions of colleges. A number of studies using the latter strategy then use stepwise regression, allowing a computer program to pick the "important" college variables. Researchers have generally failed to specify why certain dimensions might be important theoretically, or how these dimensions might come to affect students. That is, there has been little attention to processes of change. This can be seen in the restricted use of intervening variables in models of college effects, despite the concurrent focus on complex path models of the individual determinants of educational outcomes (Cf. Bean, 1980; Munro, 1981; Pascarella and Terenzini, 1981; Terenzini and Pascarella, 1977, 1980). In part this has been due to the frequent use of

cross-sectional data or on short-term follow-ups in college effects studies. Most rely on retrospective data about colleges attended and experiences during the college years, and analyze outcomes at a single point in time. This leads to a lack of attention to intermediate processes and outcomes. The lack of theoretical development in the area can also be seen in the exclusion from models of other young adult experiences which might be correlated both with educational experiences and status outcomes, such as early work experience, marriage, or residence.

The previous discussion has indicated some of the crucial college dimensions for analysis, and the important elements in a causal model for analysis of college effects. First, it is clearly necessary (as most studies acknowlege), to control for individual selection/recruitment variables which are correlated with college characteristics, and affect educational and occupational outcomes. This study includes controls for socio- economic background, race,religion, gender, ability, high school achievement and curriculum, early educational goals, and parental aspirations. Second, it is especially necessary to separate true contextual effects from simple between-college differences in student experiences (such as residence on or off-campus, marital status, employment, and part- or full-time student status). While these individual experiences may be in part structured by colleges, they cannot in and of themselves be called "college effects". Finally, it is important to specify a causal structure among outcomes themselves - to indicate intervening processes in college effects more precisely. This study focuses on the following intervening variables through which college variables might act: academic performance, satisfaction with college, and contact with faculty. In addition, in order to see if differences in actual attainment can be linked to changing goals, both educational and occupational goals in the postsecondary years will also be examined as outcomes. That is, the model assumes that much of the impact of college characteristics can be traced to changes in goals, differences in performance, and differences in integration into the college environment. This follows a general trend in literature on college attrition and graduation, focusing on the importance of both commitment to a specific institution and commitment to traditional academic attainments and professional occupational goals (Tinto, 1975). It is hypothesized that more selective institutions, with more socially elite populations, oriented toward preparation for graduate work and professional careers will tend to increase students' academic attainment and occupational prestige (though they will also lower relative academic performance through the "frog-pond" effect). Small colleges, low in bureaucratization, high in integration, will tend to increase students' relative academic performance, and lead to higher rates of persistence and graduation (though not necessarily attendance at graduate/professional schools or occupational attainment). Large, diverse, bureaucratically organized colleges will tend to lower student performance, satisfaction, integration, and thus educational attainment. The main effects on occupational outcomes are seen as consequences of "charters", associated with high resources, high selectivity, and high socio-economic composition.

The basic causal model proposed is shown in Figure 1

Figure 1 About Here

Methods

Sample

This study uses a subset of the National Longitudinal Study of the High School Class of 1972 (Levinsohn et al, 1978). Only entrants to two- or four-year colleges, in academic curricula (see Eckland et al, 1979 for

operationalization), by the Fall of 1974 are included. In addition, only respondents to at least the base-year and first follow-up surveys are utilized. The resulting maximum number of cases for analysis is 7376. Response rates for the follow-ups have been quite high, and are likely higher for college attenders than other groups (see Levinsohn et al, 1978 for description of follow-up procedures and specific response rates). Out of respondents to the base year survey, over 93% completed the first followup questionnaire.

Measurement of Individual Student Variables

Background variables. The following variables were chosen as controls for the analysis of college effects. They were selected on the basis of both preliminary analysis and previous literature. All of these variables are taken from the base-year NLS survey. Socio-economic status is measured by four separate indicators: father's education (FAED), mother's education (MOED), father's occupational prestige score on the Duncan SEI scale (FOCC), and family income (INC). The student's race is represented by a dummy variable (BLACK), with blacks scored as 2 and whites as 1. Gender is also a dummy variable (MALE), with males 2 and females 1. Religion is represented by two dummy variables — chosen by preliminary analyses. The variables are Jewish (JEW), and Catholic (CATH), and the omitted comparison groups thus include Protestant, other Christian, other and none. Three measures of academic preparation are used. Ability (ABIL) is the standardized sum of scores on the reading, letter groups, math, and vocabulary subtests given with the base-year questionnaire. High school program (HSPGM) is a dummy variable contrasting non-college (2) with college preparatory (1). High school achievement (HSGPA) is a measure of average grades in high school, taken from the school record form, with missing data estimated by student self-report data. Two indicators of achievement aspirations in high school are included. Educational plans (EDEXP) refers to the level of education the student actually expected to attain, with missing data estimated from levels of aspirations. The Duncan SEI score for occupational plans (OCASP) was also used. In addition, the study includes a measure of academic self concept (ACSC). It refers to the student's confidence in ability to do well in college. Finally, a measure of parental aspirations (PASP), constructed by averaging student reports of the level of education desired by mother and father was used.

A final control variable is necessary because of the inclusion of both immediate and delayed college entrants. While some studies have shown that determinants of educational performance and attainment are similar for the two groups (especially when the delay is only one or two years), it is necessary to control for the main effects of delayed entry on outcomes. The variable is a dichotomy (DELAY) of whether the student enter late (1), or immediately after high school(0).

Post-high school role involvements. Four factors dealing with individual level of involvement with the student role and other potentially competitive roles are included as controls in a second stage. Marital status (MS) is a dichotomy for currently married or not at the time of entry to college. Hours of employment(HRS) is the number of hours per week worked in October of the year of college entry. Residence on-campus or off-campus(CAMPUS) is also a dichotomy. Finally, classification as a full-time or part-time student (FTPT) is used.

Intervening college experience variables. Three measures of the experiences of students in the college setting are included. College academic performance (GPA) refers to average grades in the first year of college

Faculty contact is a simple measure of whether the student reports they know a faculty member well enough to ask for a letter of reference or recommendation (FAC). Overall level of satisfaction with college experiences (CSAT) is determined by average ratings of several aspects of the college and one's life there, on a one to five scale.

Educational Outcomes. Since the primary concern of this research is with effects of college experiences on traditional educational attainment, all dependent variables refer to the amount of such attainment in the years after college entry. The study does not look at vocational education, or other nontraditional training. A number of variables were initially examined. The following were chosen for more extensive analysis. The first is a measure of whether the student persisted for at least one year in an academic program in a two or four-year college (P2). Again, this does not refer to persistence in the same college, only to persistence in some college. Preliminary analyses showed a pattern of increasing magnitude of the effects of initial college on persistence from the second to the fourth year after college entry. However, many studies have indicated that the greatest point of attrition is in the first year. Therefore, this variable has importance for comparability to other research. Rather than examine each succeeding year, a second measure of attainment is used for analysis - attainment of a bachelor's degree (BA) by 1979 (seven years after high school). College impacts seem to steadily increase from second year persistence to fourth year, with even stronger effects on degree attainment. In addition, a summary measure of the number of years of college completed by 1979 (EDATT) is analyzed. The final measure of educational attainment refers to whether the student had entered a graduate or professional program at the post-baccalaureate level (GRAD) by 1979. A measure of academic educational goals (ED79) is also analyzed. It measures the level of college education the respondent expected to complete, and it is taken from the 1979 questionnaire. Through this one can see if long term plans for education are as greatly affected as early attainment levels.

Occupational Outcomes. To explore the long term effects of where one begins a college education, a number of indicators of characteristics of the respondent's occupation are also examined. For these analyses, only those students who were working for pay in either Fall 1978 or 1977 were used. All measures are taken from the fourth follow-up, and refer to the last job held (1978 or 1977). All college entrants are eligible for these analyses; the fact that students did not graduate, or that they are still enrolled in college did not lead to their exclusion, if they were also employed. Later analyses will refine these, and focus only on graduates, and only on those not currently enrolled in the fourth follow-up. The measures of occupational status include, (1) average pay per hour (PAY)- calculated from pay per week divided by hours worked per week; (2) Duncan SEI score of job (SEI); (3) closeness of supervision by others over work, on a scale of 1 to 5 (SUBORD) ; (4) the degree to which the job entails work with "THINGS", "PAPERwork", and "IDEAS", each on a scale of 1 to 4. The final occupational outcome is a measure of the type of occupation the respondent thought he would hold at age 30, in broad occupational categories (OCC79). The categories were ranked by typical SEI level, from unskilled labor to high professions. Responses of housewife, military, or unemployed were declared as missing. These indicators give measures both of very early levels of achievement, and of the probability of movement upward.

College Variables

The NLS surveys include F.I.C.E. codes for higher education institutions attended by the college entrants at each point in time. These analyses

utilize only the first college attended (which could be 1972. 1973, or 1974). Through a match-merging process, data on the first institution attended were added to the student record. Data on institutions were taken from two machine-readable sources, which themselves include data from American Council on Education surveys, NCES, HEGIS, HED and other federal databases. Wherever possible, missing data from one source was estimated using data from one of the other sources. The two machine-readable institutional files are Tenison (1976) — prepared for the College Entrance Examination Board, and Carroll (1979) —characteristics of postsecondary education prepared for the Office of Education. The Tenison file includes matched data for institutions attended by 73% of those who claimed they were in postsecondary institutions in 1972 or 1973. The Tenison file includes primarily traditional colleges and universities. The Carroll file has wider coverage — including all postsecondary institutions. However, since this analysis deals with students in academic programs, most of those institutions are inappropriate. In addition, many of these did not have F.I.C.E. codes, and thus could not have been merged with NLS data. Therefore, only the cases from the Carroll file that had F.I.C.E. codes were included for merging. This latter file contained 5975 institutions. The Tenison file included only 4139 institutions, a subset of the Carroll file. Data from the smaller file was added to institutions in the larger file, and attempts were made to derive measures of all desired variables. Measures were chosen based on theoretical relevance, extent of institutional coverage, and data quality. Where possible, missing data were estimated using similar measures from another source. Measures with too much overlap with other measures, measures with little variability, measures with obvious problems (such as many clearly out of range scores) were excluded in the preliminary stages of the research. Some composites were either already constructed in the data sources, or were created from similar indicators of concepts.

The following measures were kept for possible use in analysis:

Institutional type

1. A set of dummy variables for private university, private four-year college, private two-year college, public university, public four-year college, with public two-year college as omitted comparison group. The indicator of level (two, four, university) is based on the Higher Education directory classifications. Four-year colleges are those offering at least four-years of post-high school work, granting baccalaureate or equivalent degrees. Universities are those with considerable emphasis on graduate instruction, with at least two professional schools not exclusively technological in character. Two-year schools are those offering only associate degrees, certificates, and diplomas, below the baccalaureate level. Public includes institutions under federal, state, or local control. Private includes both religious-affiliated and other private colleges.

Ability composition

1. Selectivity - mean SAT score of freshmen class

Social composition

1. composite SES score from Carroll (1979) - trichotomy based on parental social status, financial aid, correlated variables
2. percent of part and full-time students with family income LT 6,000 Originally coded in deciles, recoded to the median of the decile range.
3. percent of freshmen class of minority group. If missing, and

categorized as one of 105 "traditionally black" institutions, value was set equal to 100%. Also recoded from deciles to percentages using the median of the range.

Size and diversity

1. Total opening fall enrollment, undergraduate and graduate, with missing data estimated from a composite size indicator from Carroll (1979)
2. number of major areas offered

Integration

1. percent of all students enrolled part-time Constructed using Tripartite data on numbers of full-time and part-time undergraduates and graduate students. Missing data estimated using a decile score for the percent of half-time students from Carroll(1979).
2. percent of all freshmen employed
3. percent of all freshmen living on-campus

Organization goal orientation

1. Liberal arts college
2. percent of all majors offered in vocational areas, with vocational defined as any area other than liberal arts and natural sciences/mathematics. This includes areas like business, engineering, education, trades, and other applied programs.
3. percent of all students at graduate/professional level
4. ranked as leading research university (Carnegie Commission, 1973)

Resources

1. combined tuition /fees cost (undergraduate)
2. educational/general expenditures per student

Obviously, this is still quite a large set of college characteristics. In an attempt to further select or combine indicators, both exploratory and confirmatory (Joreskog, 1982) factor analysis procedures were used. Simple exploratory factor analyses of this set (and of larger sets in earlier stages), using principal components analysis with orthogonal rotation, indicated the existence of four independent factors. The first has a positive loading for percent living on campus, and negative loadings from vocational majors and percent half-time. This could be termed an "integration" factor. The second has positive loadings for size and number of different majors offered, corresponding to a theoretical factor of bureaucratization and complexity. The third factor has high positive loadings for percent graduate students, expenditures, cost, and average SAT. This sounds closest to what is generally termed "quality". The fourth factor has positive loadings for composite SES and average SAT scores, and negative loadings for the percent of low-income students, and percent minority group students. It thus corresponds best to a general socio-economic compositon factor.

However, when confirmatory factor analytic methods were applied, this four-factor model did not appear to fit the data as well as those specifying more factors. Given the large sample size, it is difficult to find a measurement model which fits the data well at the standard criterion of a likelihood ratio chi-square equal to the degrees of freedom (Bentler, 1982). However, comparison of models and their differences in ratios of chi-square values to degrees of freedom is suggested as a useful test of comparative fit of models (Bentler, 1982). A single factor model ("quality"), two factor models, and three factor models were all inferior to the four factor model, using this criterion. The four-factor model first tested was derived from the

exploratory factor analyses. However, each variable was constrained to load on only one factor, and factors were allowed to be oblique rather than orthogonal. SAT scores, expenditures, costs, graduate students, research university, and vocational majors (-) were allowed to load on the first factor, composite SES, low income(-) and minority students (-) on the second, size and number of majors on the third, and liberal arts, percent on- campus, percent part-time(-), percent employed (-) on the fourth. This four factor model was the best-fitting compared to numerous other variations on a four-factor scheme. Attempts were made to improve the fit by freeing parameters representing correlated errors in the indicators of concepts. However, better fits were obtained by increasing the number of oblique factors, and allowing some variables to represent perfectly measured single factors. The separation of SAT scores from the remaining "quality" variables dramatically improved fit, as did the separation of graduate students and vocationalism.

For regression analysis of the total sample, the confirmatory factor models were used as a guide in the selection of variables for the college characteristics stage of the causal model. Later analyses are planned to actually incorporate the confirmatory factor model into the structural model, using the LISREL program. The variables used in the analysis include both "resource" measures -- expenditures and tuition. These were both incorporated because of their differing theoretical meaning. While expenditures seem closest to an actual indicator of the quality of resources for students, tuition costs can be seen as an indicator of the costs students must incur to remain in college. The percent of students enrolled part-time was kept as the basic indicator of average student integration. Analyses substituting the percent of students living on-campus (which had greater missing data) indicated similar patterns in the opposite direction. The percent of students employed was dropped because of relatively large problems with missing data, and because of overlap with the half-time variable. Both the percent of minority and low SES students are used, because of their importance to conflict theory views of colleges, and their policy implications. SAT score was kept as the best indicator of ability composition. Size is used as the basic measure of organizational bureaucratization. Number of majors is an indicator of diversity of options available to students. Percent vocational majors and percent graduate students are kept as measures of the vocational versus traditional academic emphasis of the institution.

Findings

Table 1 shows the matrix of correlations between the selected college characteristics, using the student as the unit of analysis. Note that the most frequently studied dimension -- ability composition -- is measured by average SAT scores. The matrix indicates that colleges high in ability composition also tend to have higher educational expenditures, higher tuition/fees rates, fewer lower SES, minority, and half-time students, more graduate students, are larger in size and diversity of major areas (but with proportionately fewer vocational majors. Yet this does not necessarily mean that the desirable strategy for analysis is to use a scale of "quality" or to use SAT level alone.

Table 1 About Here

Table 2 indicates the variation in college organization and composition by basic institutional type. From this, it is clear that college types vary substantially in almost all of the characteristics. The patterns are quite similar across variables. Private institutions are generally higher in "quality", as defined by resources, cost, composition, and integration,

compared to similar public institutions. The same is true of universities compared to four-year colleges. Two-year colleges, especially public controlled, are generally lowest on all quality factors. The major exceptions to these patterns involve size and diversity of major areas. The largest and most diverse institutions are the public colleges and universities.

Table 2 About Here

Table 3 gives important information on the extent of between-college type differences in student background. This information is crucial to this research. Two important issues to be considered are whether colleges act to transmit the effects of student social status, and whether college effects exist controlling for selection/recruitment processes causing between college differences in student characteristics. Table 3 presents a multiple regression analysis in which characteristics of colleges were regressed simultaneously on all of the individual background variables. We seen that individual background explains from 4% to 21% of the variation in the nature of the colleges students entered. The greatest effect of background is on the traditional selectivity variable.

Parental education seems to be the most influential of the socio-economic variables. Both maternal and paternal education have more consistent effects than either father's occupation or income of the family. Overall, higher SES students do enter institutions with greater resources, higher costs, higher SES and ability composition, fewer minority students, and fewer half- time students. The institutions they attend are also larger, with more diverse curricula (though not vocationally oriented curricula), and with larger graduate programs.

Black students enter institutions which are higher in cost and expenditures (due to greater attendance at private colleges), with fewer half-time students, fewer vocational major areas, and more graduate students. However, these colleges are also lower in SES and ability composition with large black student populations. Catholic students tend to enter larger colleges, with graduate programs, higher resources and costs, less vocationalism, and higher SES and ability composition, compared to Protestant or other students. However, these institutions do have more minority students and more part-time students. Jewish students enter colleges with greater resources and costs, larger in size, with graduate programs and without vocational majors, with high SES and ability composition. Male and female students differ little in college selection. The only significant differences are male attendance at schools with higher expenditures and more graduate students. Overall, father's education, race, and being Jewish cause the greatest variations in college selection.

The influence of ability, high school grades, and high school curriculum are also strong. High ability students, with good past achievement, and in college prep programs, tend to enter schools with higher resources, greater integration despite larger size, less vocationalism, more graduate programs, and higher SES and ability composition. Academic self concept and educational goals seem to have little independent impact on college selection. Students with higher occupational goals do enter more selective schools with higher status composition, more major areas and larger graduate programs. Parental aspirations have a modest impact. Students coming from families holding high achievement aspirations for them seem to enter colleges more likely to fulfill those aspirations — greater resources, greater size and diversity, greater integration, graduate education-oriented, with high integration.

Finally, delayed entrants to college do differ in the nature of colleges attended. Late entrants tended to end up in colleges lower in cost, with more

half-time students, more vocational majors, despite fewer majors overall, and lower in selectivity.

Table 3 About Here

In Table 4, the gross differences in educational outcomes of students who entered different types of colleges, and colleges varying in specific characteristics are shown. The figures for college type are a dummy variable regression, with public two-year colleges as the omitted comparison group. The value of a represents the dependent variable mean for two-year colleges. The unstandardized coefficients for the other categories represent differences between each type and the comparison group. The explained variance represents the total variation in outcomes that can be attributed to college types. The numbers of specific college characteristics are the simple bivariate correlation coefficients. Table 5 shows the identical figures dealing with occupational outcomes. From these two tables, the following generalizations can be made:

1. Entrants to private rather than public, university rather than four-year, and four-year rather than two-year institutions are higher in educational outcomes and achievement goals, occupational status and pay, and are more likely to hold jobs involving work with paper and ideas than things. No significant differences are seen in authority.

2. Entrants to institutions with higher expenditures, higher costs, larger size, greater diversity of offerings, less vocational orientations, with lower proportions of low SES, minority, and half-time students, and more high ability and graduate students, also have higher educational outcomes and achievement goals, higher pay and occupational status, less work with things and more work with ideas.

3. The effects of colleges on educational outcomes are stronger than those on occupational outcomes.

Tables 4 and 5 About Here

A theoretical justification was given above for the inclusion of a set of variables representing the amount of involvement in the student role versus other roles. In Table 6, the relationships of college type and characteristics with marital status, hours of employment, place of residence, and full versus part-time school attendance are shown. For college type, the figures given are once again the dummy variable unstandardized regression coefficients, with public community colleges as the omitted group. The figures for college characteristics are standardized bivariate correlations. These results indicate that three of the four indicators of student integration into the student versus other roles are substantially correlated with type of college entered. Marital status does not vary significantly between colleges. Residence on-campus is least likely at two year colleges and most likely at private universities and four-year colleges. Campus residence is also higher where expenditures and costs are higher, where greater diversity in majors exists, where academic ability is higher, where there are more graduate students, and where most students are white, higher SES, full-time, and in academic curricula.

Employment, conversely, is highest at two-year colleges, and lowest at universities—both public and private—, followed by four-year schools. Students work more at colleges with high proportions of lower SES and minority students, more half-time students, and more vocational orientations. Students work fewer hours at schools with higher resources, greater diversity in majors, with graduate programs and high selectivity.

Students are more likely to be full-time at four-year colleges and

universities than two-year schools. Naturally, this variable is also inversely correlated with institutional proportions of half-time students. In addition, colleges with higher resources and costs, more major areas but fewer vocational areas, more graduate students, and higher selectivity also have more full-time students.

Thus it is necessary to control for these factors when assessing college effects. While colleges may, through policies for student admission or retention, try to limit student employment, residence, and part-time status, on the whole these are now individual decisions, and represent to a substantial degree the level of individual commitment to the student role. Thus this research argues that these variables should be treated as an additional set of correlated control variables, rather than as intervening variables through which colleges affect students. However, so that one can examine the effects of colleges, including the component due to these factors, equations are presented which represent "total" college effects with these and other factors not controlled.

Table 6 About Here

While residence, marital status, employment, and part-time status are treated simply as correlates of college characteristics, the next set of variables in the model represent intervening variables. These include college academic performance, amount of contact with faculty, and psychological integration into the college. Table 7 shows the effects of four sets of post-high school predictors on these variables. The first column for each dependent variable actually represents the results of two separate regression equations. The coefficients for PRUNV to PBCOL -- the college type dummy variables (again in unstandardized form), represent the total effects of college type, controlling for student background. That is, the equation included only background variables and the college type variables. The coefficients in the same column for college characteristics represent the effects of <u>these</u> variables controlling only for background. The college type variables were not included in the equations producing these results. The explained variance for the college type and background equation is shown below the column, with that for college characteristics and background below it in parentheses. Standardized coefficients are presented for college characteristics. The second equation for each dependent variable added <u>both</u> college type and college characteristics simultaneously, again with background controlled. The third equation adds in the student role integration variables. This format is followed in all of the remaining tables.

From Table 7 we see that students receive lower grades if they enter four-year or higher institutions, especially public universities. The disadvantage of public university and college students cannot be attributed to differences in role involvement. In addition, where there are more low SES and minority students, and in larger schools, grades of students are relatively higher. Once again, this cannot be explained by student role involvement. The only role involvement factor which does affect grades is student status. Full-time students receive lower grades than part-timers.

Contact with faculty is higher at all private colleges than public ones, and is lowest at public universities. Faculty contact is also lower at large schools, with more half-time and graduate students. The effect of half-time student composition can be attributed to differences in individual role involvement. No contextual effects beyond this are seen. However, role involvement, as expected does affect faculty contact. Unexpectedly, however, full-time status, controlling for residence and employment, actually has a

negative effect on faculty contact. Separate from this though, students living on campus are more likely to perceive they know a faculty member well.

The general level of psychological integration (or satisfaction) is higher at two-year private colleges and other private institutions than at those under private control. The only significant characteristics of colleges are their proportions of half-time and graduate students, each of which is negatively related to satisfaction. Once again, however, the effect of half-time composition can be attributed to student role involvement and in particular to its effects on student residence. Campus residents are significantly more satisfied with college experiences.

Table 7 About Here

In Tables 8 and 9 the primary results of the study are presented. Table 8 shows the complete and reduced form equation for the effects of college type, college characteristics, role involvement, and college experiences on educational attainment and achievement goals. As before the first column actually represents two equations- the net (of background) effects of college type, and the net effects of college characteristics, each set entered excluding the other. The second column is the equation including both college sets, the third adds the role involvement variables, the fourth college experiences. Unstandardized coefficients are given for college type and standardized for all others.

Persistence to the second year. We first examine the measure of early persistence in college. First, one can see that persistence is highest at public universities, followed by private colleges, public colleges, and private universities. Persistence is lowest at two-year colleges. Among the college characteristics, ability composition has a positive effect on persistence, while percent of half-time students has a negative effect. Once role involvement is considered however, these effects become insignificant. However, evidently these factors suppressed two other aspects of college effects. In the third and fourth equations, level of expenditures has a negative effect on persistence, while percent minority has a positive effect.

In addition, unmarried students, those working fewer hours, enrolled full-time and living on-campus are higher in persistence. Finally, as expected, students with higher performance, greater faculty contact, and higher satisfaction are more likely to persist in college. Controlling all of these factors though, it is the "poorer" colleges with more minority colleges that produce greater odds of persistence.

Attainment of bachelor's degree. All four-year or higher colleges are superior to two-year colleges in degree attainment. Private colleges are also superior to public institutions, within each level. These college type effects decline with the addition of college characteristics, though two-year colleges remain lower than all others. Considering college characteristics alone, degree completion is higher at colleges with lower expenditures, small in size, but with predominantly full-time students, a diverse curriculum structure with a more academic than vocational orientation, with higher ability students. The effects of all of these but diversity of curricula and ability composition remain significant controlling for role involvement.

Once again, there are substantial advantages for students who live on-campus, who enroll full-time, and who do not work or work only a few hours a week. Performance and faculty contact are again positive in their effects, and their strength is greater than for early persistence. Performance is particularly important , with an effect twice as strong as faculty contact. Level of satisfaction is a less important, but still significant positive factor in degree completion.

Educational attainment. Again there is a clear pattern of differentiation in outcomes by college type, controlling for a variety of student selection/recruitment factors. Private institutions have positive effects compared to public schools. The most advantageous settings are the private universities, and the most disadvantageous are the public community colleges. However, controlling for the set of college characteristics, public colleges actually have an advantage over similar private schools. The initial positive effect of going to a private institution is due to differences in the composition and organization of these institutions. Of the college characteristics, the following are associated with increased levels of educational attainment: larger proportions of low SES students, smaller size, fewer half-time students, and fewer vocational majors. However, most of these effects can be attributed to differences in student role involvement. Only having a lower SES compositon and greater integration (fewer half-time students) remain significant positive factors in attainment. As with other aspects of educational attainment, students who enroll full-time, who live on-campus, and who have lower employment levels have higher attainments by 1979. High academic performance, contact with faculty, and college satisfaction also increase attainment. The effect of academic performance seems much stronger for long-term attainment than for short-term persistence. The effect is also greater than that for degree completion, and is three times as strong as that of faculty contact and satisfaction level.

Graduate school attendance. Among this group of college entrants, the nature of the first college attended has little impact on later entry to graduate level programs. Thus either the specific decision to enter a graduate program is one based more on individual background, or it is affected by later college experiences more than early ones. It is also likely that stronger effects would be seen if the population were limited to college graduates. However, at this point, our interest is primarily in the long term effects of early enrollment decisions. Further work is planned to explore effects of last college attended and the issue of greater effects for graduates than entrants.

The results do show some advantage of private over public institutions, and a continuing disadvantage of two-year college entry compared to all other college types. Among the remaining post-high school variables, there are significant effects. Students who work more hours while in schools and who live off-campus are less likely to enter graduate school in later years. These effects remain significant even controlling for differences in performance and integration into the college. In addition, a positive effect of full-time attendance emerges in the final equation. Finally, as predicted, students with higher performance, greater faculty contact, and greater satisfaction are more likely to get some graduate education.

Achievement goals. Educational goals are most affected by basic college type. The strongest pattern among these types is the clear disadvantage for entrants to two-year colleges, and the clear advantage of entrants to private universities. Two specific aspects of colleges have some impact as well. Colleges high in costs, and those with a more academic than vocational atmosphere (as in private universities) encourage higher educational plans several years after entry. The advantage of private university entrants continues despite controls for college characteristics, role involvement, and college experiences. Students who are full-time and live on-campus, those with high grades, and faculty contact, are again superior in later educational plans. The effects of grades and residence are particularly strong.

As with educational goals, occupational goals are higher for those who

enter private compared to public institutions, and are lower for two-year college entrants than all other types. However, the highest college type is four-year private, rather than universities. Two college characteristic variables are significant in the first equation: tuition/fees costs, and low SES student composition. The positive effect of low SES composition is also significant controlling college type, and seems in part to explain the positive effect of private colleges on goals. Its effect is not diminished when controlling for role involvement and college experiences. However, those latter factors are important once again. Student residence on-campus and low employment levels lead to higher occupational goals in later life. In addition, students with higher grades, and greater faculty contact and integration tend to increase goal levels over time.

Occupational status. Table 9 shows the effects of colleges and post-high school experiences on the several measures of occupational attainments. As noted earlier, these are for those individuals who were employed, even if part-time, and even if still in school, as of 1978 (or 1977 if not employed in 78). At this point, by far the majority have left full-time school attendance, and are establishing their early occupational careers. While the nature of this first job will probably show only a modest relationship to later attainment, it may indicate the chances for upward job mobility. The first occupational measure is the Duncan SEI of the job held in either 1978 or 1977. In the first column, the coefficients for the net total effects of college type indicate that all four-year or higher institutions are superior to public two-year colleges. Among the four-year institutions, private universities lead to the highest SEI scores, followed by public colleges. Among the set of specific college characteristics, only the percent of half-time students and average ability composition are significant. With both college sets in the equation, only the percent of half-time students retains a significant, and negative, effect. And, this effect declines once individual role involvements are taken into account. Among the role involvement variables, the crucial factor seems to be residence on campus. However, once grades, faculty interaction, satisfaction and attainments are controlled, the impact of residence declines, and the effect of amount of employment in the first year of college becomes positive and significant. Thus, independent of all else, students who began their employment soon after high school have a mild advantage in gaining a higher status job a few years later. Students with high college achievement, who had favorable ratings of their college experiences, completed more years of educaton, and received a bachelor's degree had higher status jobs. The most important factor was the completion of a degree program. College experiences and attainments add much more to the explanation of SEI scores than do college characteristics or role involvements.

Analysis of pay per hour for employment indicates even lesser effects of colleges. The only college variable which is significant is, unexpectedly, the size of the institution. Students entering larger schools have significantly higher pay than those from small schools. This effect cannot be explained by differences in role involvements in the college years, by college experiences, or by educational attainment. However, the third and fourth equations do indicate some importance of these factors. Students who lived on campus, and were part-time students in the first year, have higher paying jobs. These effects are partly explained by differences in college academic performance, satisfaction, and degree completion, all of which have positive effects on pay level. Only about half as much variation in pay can be explained by the variables in the model, compared to analyses of SEI level.

Analyses of actual characteristics of the work done by the respondent show even smaller effects of colleges and college experiences. Students at colleges with high proportions of part-time students are slightly higher in degree of subordination to others. No other college factors reach significance in the model. Role involvement has only limited effects, with students who worked more in the early college years in jobs with lower subordination. In addition, students who had good relations with faculty, who enjoyed their college experiences, and who completed more years of college, tend to have jobs with greater autonomy.

The nature of the work -- things, paper, and ideas, will be discussed together. There do seem to be some effects of basic college type on the nature of the job held. Students who enter two-year public colleges later hold jobs that deal more with "things", and less with either "paper" or "ideas" than students entering any other kind of institution. On the other end of the spectrum, those students who enter private universities later hold jobs that are far lower in "things", and higher in both "paper" and "ideas" than students beginning in other contexts. There also appears to be some minor advantage in "paper" and "ideas" and disadvantage in "things" for students entering private four-year colleges compared to those in similar public schools. However, the more prominent trends are those mentioned initially. It does seem that two-year colleges track students into jobs more "blue-collar" in nature, while the elite private universities lead students into white collar jobs, even this early in students' careers. While the advantage of private universities in the white collar indicators remains even with controls for other college experiences and role involvements, between-type differences in "things" disappear with other variables in the equation. Two college characteristics affect degree of work with things: the percent minority (a negative effect), and percent half-time students (positive in direction). Thus students entering black colleges are less likely to enter blue-collar jobs later in their careers, while students at colleges low in integration are more likely to do so. In addition, with controls for later educational experiences, the percent of low-income students also emerges as a positive and significant factor in determining amount of work with things. This effect of low SES students also appears in analyses of degree of work with paper. Students from low SES schools are less likely to end up in white collar jobs dealing with paperwork. The disadvantage of students in schools with low levels of integration is also seen in analyses of work with ideas. Students from such institutions are less likely to end up in the professional/managerial jobs requiring more work with ideas. Finally, once experiences are controlled, one additional college variable reaches significance for the "ideas" variable: size. As with pay, students entering larger schools end up in jobs requiring higher skill levels.

The only effect of marital status seen in any of these analyses is that found for degree of work with paper. Married students are more likely to take clerical-level jobs, and this effect is not explained by differences Once again, a positive aspect of residence on campus is also seen in these analyses. Those who live on campus end up in jobs involving less work with things and more with ideas. However, these effects are attributable to higher performance, satisfaction, and attainment of resident students. Good academic performance itself acts primarily to lower blue-collar work with things. Students with higher contact with faculty also retain an employment advantage later on, with lower work with things and greater work with ideas. Students well-integrated into the college they entered also are more likely to get white-collar jobs involving work with paper or ideas. Finally, as one would

expect, the strongest determinants of the nature of the job are years of college completed and degree attainment. These factors both act to strongly decrease degree of work with things, and to increase both "paper" and "ideas" oriented work. Overall, it is these latter college achievement, integration, and attainment variables that explain most of the variation in job character.

Tables 8 and 9 About Here

Background Effects on College Experiences. The final question to be explored is the issue of whether colleges act to reinforce the existing stratification system by transmitting effects of students' ascribed statuses on educational and occupational outcomes. These analyses are also important because the study has failed to find evidence of strong independent college effects on outcomes. It now seems important to see first what background factors explain variations in outcomes, and second, whether college differences act as intervening variables interpreting background effects. To analyze this question fully, we first start with exploration of the extent to which colleges explain background effects on students' performance in college, and integration into the college (contact with faculty and satisfaction). Table 10 shows the effects of ascribed statuses (SES, sex, race, and religion), academic preparation (ability, high school grades and curriculum), achievement goals and significant other support, and delayed entry. The first equation for each dependent variable represents total effects, the second effects controlling for the two sets of college variables (type and characteristics) simultaneously, and the third effects controlling all other variables in the model (role involvements). This basic structure is continued for Tables 11 and 12 analyzing effects on educational and occupational outcomes respectively.

Academic performance. Out of the set of family social status indicators, only family income shows a significant independent effect on performance. Its effect, however, increases rather than decreases when controlling for college effects. Thus high income families do not pass on performance advantages by directing their children into different kinds of colleges than lower income families. Male and black students receive lower grades, but again these disadvantages are not due to variations in post-high school education or other experiences. The same is true of the positive effects of Catholic or Jewish religious affiliation. Effects of ability and high school grades also increase when controlling for all post-high school variables, though the effect of high school grades is lower when college characteristics alone are controlled.

Beliefs in academic ability are also good predictors of college performance, but the effects are not transmitted by colleges. Only the negative effect of occupational aspirations decreases when controlling for colleges, perhaps due to the tendency of those with high aspirations to enter more selective schools. The positive effect of delayed entry on grades can be explained partially by the differing role involvements of delayed and immediate entrants, and to a lesser extent by the colleges the two groups enter.

Contact with faculty. Income also positively affects contact with faculty, while being male, black, Catholic, or Jewish lowers such contact. Only the effects of religion decrease tp nonsignificance controlling college characteristics and role involvements. Unexpectedly, higher ability students have lower faculty contact, while those with higher high school grades have greater contact. In addition, high academic self concepts and high parental aspirations increase faculty/student contact significantly. None of these effects are explained by college and role involvements.

College satisfaction. Satisfaction with the college environment is negatively related to father's occupation, but positively related to mother's education. While non-significant, the effects of income parallel those of father's occupation and father's education those of mother's education. Thus parents with more education encourage a "fit" of their children into an academic atmosphere which high status and income alone do not provide. Once again, males are less satisfied with college life. Students who did well in high school, were in a college prep program, have high educational plans and academic self concepts and parental encouragement are all better integrated psychologically into their college environments.1 Once again though, we find that those with the highest occupational plans are less satisfied. And, despite their higher performance, delayed entrants are less likely to "fit" with the college. Again, colleges explain only minor proportions of any of these background effects.

Table 10 About Here

Educational attainment. The basic attainment variables (P2,BA, EDATT) will be discussed as a unit, with any important variations noted. Out of the SES factors, parental education is most influential, with its effects cumulating over time. That is parental education effects are less important for first year persistence, but continue to be important each year, resulting in stronger effects on degree completion and overall attainment. Father's education seems to have the greatest direct effect, with those of mother's education being transmitted to a greater degree by role involvements and experiences in college. A positive effect of being male consistently emerges, but only when controlling for colleges, roles, and experiences in colleges. Its effect is suppressed in earlier equations. There also is a positive effect of being black, though its effect is primarily indirect, transmitted partly by colleges themselves, and partly by experiences in colleges. Catholic ,and to a greater extent, Jewish students are also advantaged in educational attainment, with effects cumulating over the period as for SES. Small portions of these effects are due to differing student experiences within colleges.

While ability does not affect first-year persistence, cumulative attainment and degree completion are positively related to student ability. However, colleges and college experiences each explain about a quarter of its effects. High school performance and curriculum are even more strongly related to educational outcomes, and their effects begin even in the first year. These effects are partly explained by college experiences, and to a lesser extent by college characteristics. High achievement oreientations (all three indicators), and parental aspirations are all positive and significant determinants of educational attainment. While colleges and college experiences each explain small proportions of the effects of these variables, clear direct effects are also seen.

Finally, delayed entry decreases not just overall attainment and degree completion (as one would expect due to lesser time available than for immediate entrants), but even first year persistence. This is partly due to the colleges such students enter and their lesser involvement in the student role and lesser psychological integration.

Graduate school entry. When we look at graduate school entry among all college entrants, SES does not seem influential, though parental education and income all have positive coefficients. Blacks and males both have an advantage, but the effects of sex are only direct (suppressed by college experiences), while those of race are explained by differing college characteristics. Jewish and Catholic students are more likely to enter

graduate school, as are students of higher ability, academic preparation and achievement orientation. Parental aspirations also continue to be important. However, delayed entry is not a significant predictor. The major proportion of these effects is direct and not transmitted by colleges or student experiences.

Achievement goals. Achievement goals, both educational and occupational, are positively affected by parental (especially paternal) education. Males, once performance in colleges is controlled, emerge wth an advantage in educational goals, though they have significantly lower occupational goals. Black students have higher educational goals, and to a lesser extent higher occupational goals as well. Catholic and Jewish students are also higher in goals for education. Ability and high school preparation and all aspects of achievement orientation in high school are significant. Once again, delayed entry does not seem to lower long-term goals, although it does affect even initial persistence in college. All of these background effects can be attributed partially to better college experiences (performance and integration) and to a lesser degree to superior college characteristics. However, once again, most of the effects are direct and independent of all post-high school factors.

Table 11 About Here

Socioeconomic index of job. Both father's occupation and parental income have positive effects on initial occupational status. However, controlling for all post-high school factors, a negative effect of father's education emerges. The effect of income can be attributed in part to variation in educational attainment. However, the effects of father's occupation and education are direct. A fairly strong effect of gender on SEI score is seen in this analysis. Males obtain initial jobs lower in occupational prestige. This effect is not due to variations in postsecondary experiences. In fact, the direct effect is greater than the total effect. Controlling for the male-female differences in educational attainment, the male disadvantage in SEI level increases slightly. A positive effect of being Jewish compared to Protestant/other religion is also seen. This effect does seem to be due primarily to differences in educational performance and attainment. Both ability and high school performance have positive effects on SEI level. Small proportions of these effects are due to between college differences, and a greater proportion to differences in educational attainment. Students with initially high occupational aspirations and with positive academic self concepts also obtain jobs higher in status. However, controlling for all postsecondary experiences, students with high educational jobs get jobs lower in status. This is probably due to continued education. Parental encouragement of achievement is also a positive factor, and its effect is almost entirely attributable to higher educational attainment of the students. Delayed entrants obtain jobs lower in status, but this is also generally due to lesser educational attainment at this point in time. Overall, colleges explain very little of the background variable effects on SEI, while college experiences and attainments explain somewhat more. Overall, the model explains about twenty percent of the variance of SEI scores.

Pay per hour of job. Only parental income, of the SES background factors, has a significant effect on pay. This effect is primarily direct. Males, while they obtain jobs lower in status, have higher paying jobs than females of equivalent background and attainment. In fact, differences in educational experiences and attainments only serve to increase the sex differences. Catholic students have a mild advantage in pay as well. While academic ability in general is not relevant to early income, students with

higher early performance levels do get better paying jobs. This advantage is due partly to later college performance and attainment. Students with high academic self concepts also obtain better paying jobs, though those with initially high occupational aspirations are in lower paying jobs. As with prestige, delayed entrants get jobs with lower pay. This is not attributable to their lesser educational attainment at the time. In fact, the negative effect of delayed entry increases with controls for college experiences and attainments. The model as a whole is less successful in explaining pay than status of the early job. It explains less than five percent of the variance in pay.

Subordination level of job. Once again, parental income seems to be the crucial family background variable. Higher family income leads to jobs in which young people have lesser subordination to supervisors and more autonomy. This effect is not due to differences in any postsecondary experiences or attainments. Black, Catholic, and Jewish students, however, all tend to enter jobs in which they are more subordinate to others. Early academic skills and preparation do not seem relevant to this job characteristic. However, students with higher academic self concepts and lower early occupational aspirations obtain jobs with less supervision. Even less of the variance in subordination is explained by the model than is the case for pay level. Background effects on subordination are also not due to differences in where students go to college.

Degree of work with things, paper, and ideas. Again, we will combine the discussion of these three characteristics of the work itself. First, few effects of parental SES are found. Income does act to decrease work with things, and father's education decreases work with paper. However, neither factor affects degree of work with ideas (which seems the most prestigious of the three kinds of work). Gender acts primarily to influence degree of work with paper, with males less likely to be in white collar "paper" oriented positions. This is not attributable to what happens to male and female students in the postsecondary years, but is probably due simply to sex segregation of occupational life in general. Black students are less likely to be in jobs emphasizing work with either things or ideas. The lesser work with things does seem to be due to differences in college attended by black and white students. Religion seems more relevant than SES. Catholic students obtain jobs involving lesser work with things, and more with both paper and ideas. Jewish students also get jobs dealing less with things. Thus both groups get jobs that seem less blue collar, and more white collar in nature. Unexpectedly, students with higher ability enter jobs that deal less with ideas than is true for lower ability students. Perhaps this is again due to continued school enrollment combined with part-time employment. On the other hand, students with high performance in high school get jobs dealing to a greater degree with both paper and things. This is primarily due to their higher performance in college and greater educational attainment. Students with high academic self concepts also obtain jobs having less to do with things and more with paper and ideas. High occupational aspirations also seem to give students an advantage in finding jobs lower in things and higher in paper. The same is true of high parental aspirations. Again, much of this can be traced to higher performance and attainment after high school. Delayed entry does not seem to have much of an effect on the actual nature of jobs. It serves only to lower degree of work with ideas, and this effect is mostly due to lesser attainment at the time. The model as a whole explains only about five percent of the variance in the nature of jobs, and most of this is due to the college experience/attainment set of predictors, rather than to

either background or college type/characteristics.

Table 12 About Here

Conclusions

First, this study does point out the importance of further work on the dimensionality of college characteristics and the specification of critical dimensions for different student groups and student outcomes. It suggests that "quality" alone is simply not an adequate indicator of all the important aspects of institutions of higher education. At a minimum, there are separate dimensions of "quality", social/ethnic composition, integration and complexity/bureaucratization. Selectivity in admissions may also be distinct from general quality of resources, and it may be important to consider the undergraduate/graduate focus and academic/vocational focus as discrete factors.

While many researchers have examined multiple college dimensions, such research has had a psychological bias, in which organizational and compositional factors are seen as reducible to the primary variable of interpersonal influence. While this may be appropriate for some research questions, it is also appropriate to examine the broader organizational and compositional factors themselves. First, these factors are more immediately amenable to change through manipulation of policies. Second, they allow us to begin to make use of existing theories on organizations and organizational effects from a sociological perspective. What sociologists have learned about other kinds of complex organizations should be used to better understand colleges and universities.

Do colleges affect students?. In the early post-high school years, colleges seem to primarily affect outcomes associated directly with schooling. Labor force outcomes, averaged over all college entrants, are not as dependent on college characteristics or experiences, though they are affected by educational attainment.

One of the more important effects of where students go to college is on average student performance. Students are able to obtain higher average grades (controlling for relevant individual background predictors) when they enter colleges with higher tuition (mostly due to the positive effects of private control. They also can obtain higher grades if they enter colleges with more low SES and minority students, more half-time students, but with less diversity in curricula and a more vocational orientation. Another important set of effects is that of college characteristics on contact with faculty. While the measure used here is not a good one, there were effects found of colleges on this indicator. Students can get increased contact with faculty at private coleges where costs are higher, at smaller colleges with fewer half-time and graduate students, but with a more vocational orientation. Finally students feel more satisfied with college life when they begin in colleges with lower curricular diversity, and fewer half-time and graduate students. Overall then, students gain a number of advantages when they enter small, less socially selective, but highly integrated settings, under private control, but with vocational curriculum emphases. In such settings, students get higher grades, more personal interaction with faculty, and higher psychological integration.

The picture changes somewhat when considering not these immediate effects of colleges, but longer term measures of persistence in academic programs, graduation, and entry to graduate school. First, the study found that a traditional measure of "quality" -- general and educational expenditures per student -- did not have positive effects on students educational attainment. In fact, considered separately from other college variables, some negative

effects of expenditures were found. Financial resources alone, not taking into account how they are utilized, do not aid student attainment. Composition effects also do not support the ideas of many conflict theorists that colleges serving lower status populations act to directly discourage student status attainment. In fact, partly due to their more lenient grading policies and higher integration, institutions such as unselective, private four-year colleges support student attainment. Colleges with more low income and black students actually lead to greater educational attainment of entrants. However, vocational orientations and low integration -- characteristics of many public four-year colleges and public community colleges that serve the majority of low income and minority students -- do act to lower student persistence and attainment in academic programs. In addition, while high socioeconomic composition does not aid student attainment, high ability composition (selectivity) does have generally positive effects on student attainment. The effects of two measures traditionally used as measures of bureaucratization (size and complexity) show opposite effects on some of the indicators of attainment. Larger size has generally negative effects on educational attainment, while greater diversity in curricula has positive effects.

The Combination of Student and Non-Student Role Involvement. Earlier, it was argued that to provide the most stringent test of college effects, one should control for involvement in competing roles versus the student role. However, it should be kept in mind that colleges can -- to a certain extent-- influence the combining of student and non-student roles. The analyses presented here show that colleges differ significantly in the role involvement of students. Two-year, public, low SES, vocationally oriented, low resource level, low selectivity, absence of graduate programs -- all of these are associated with a greater likelihood that students are less involved with the student role, and are combining work and family roles as well. Since living on-campus, not working or working only part-time, and being a full-time student are all positive and significant factors in student attainment, these between college variations are also important to consider. Colleges may be affecting student attainment by structuring opportunities students have for combining college, work, off-campus residence, and marriage.

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FIGURE 1

Causal Model of College Effects

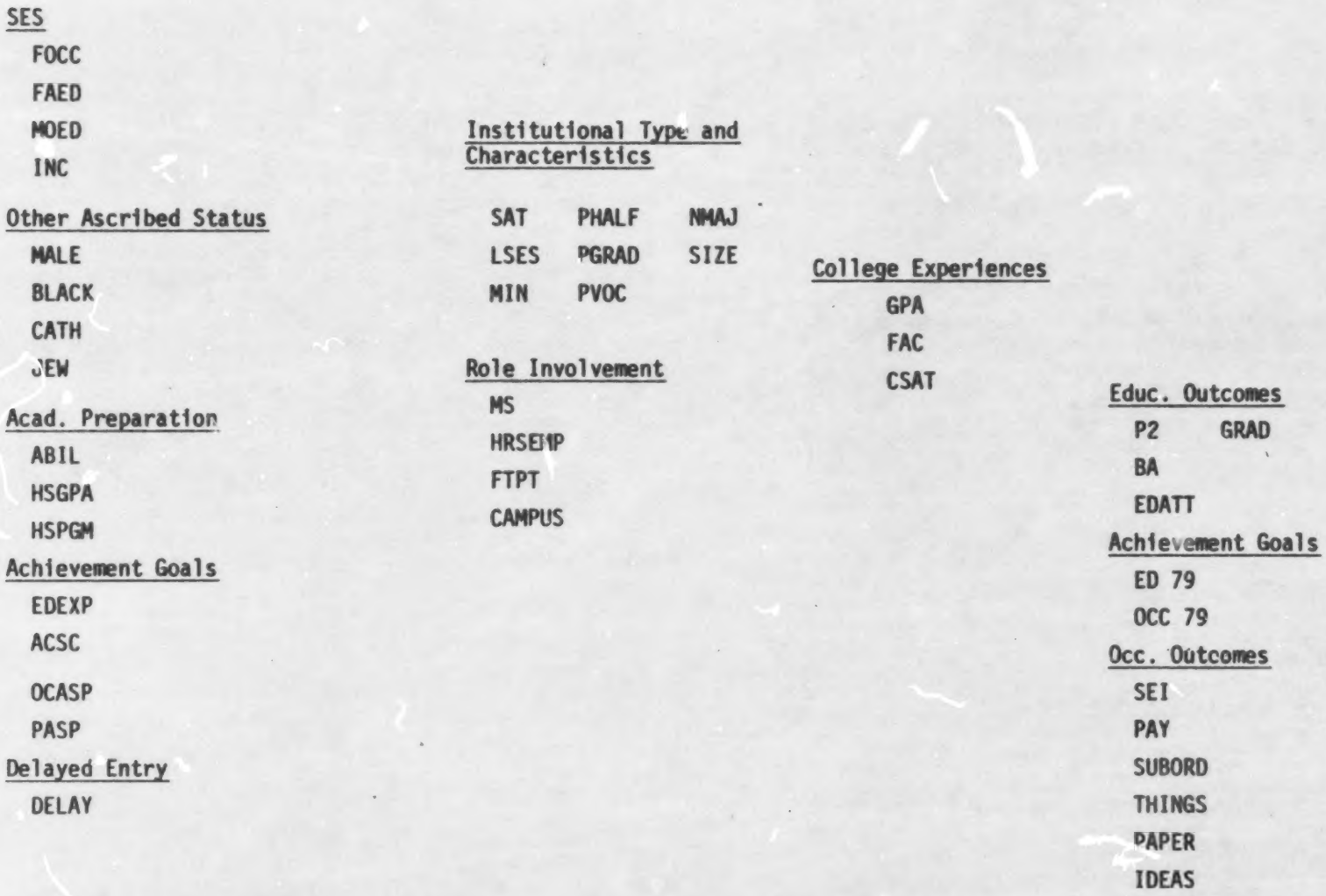

Table 1

Correlations, Means and Standard Deviations of College Characteristics

	EXP	TTN	LSES	MIN	HT	SIZE	NMAJ	PGRAD	PVOC	SAT
EXP	1.000									
TTN	.318	1.000								
LSES	-.171	-.323	1.000							
MIN	-.053	-.156	.508	1.000						
HT	-.319	-.366	.122	.135	1.000					
SIZE	.118	-.194	-.173	-.052	-.062	1.000				
NMAJ	.105	-.063	-.146	-.109	-.307	.639	1.000			
PGRAD	.378	.146	-.138	-.060	-.208	.246	.210	1.000		
PVOC	-.299	-.443	.238	.083	.413	-.121	-.220	-.289	1.000	
SAT	.487	.508	-.480	-.320	-.400	.322	.281	.344	-.515	1.000
S.D.	19.78	696	.121	18.79	.151	9240	18.19	.145	.177	121
MEAN	21.83	824	.195	18.75	.174	9987	39.34	.116	.520	955
N	6048	6372	5408	5604	6283	6372	6289	5503	6289	6305

Table 2

College Type Variation in Organization and Composition

	College Type						
	PRUNV	PRCOL	PRTWO	PBUNV	PBCOL	A	R2
EXP	22.89	14.92	4.66	11.98	11.76	12.45	.102
TTN	1884	1505	704	142	135	380	.723
LSES	-.097	-.059	.008*	-.037	.003	.217	.058
MIN	-6.29	-5.22	-5.17	-2.93	-1.29	21.17	.011
HT	-.283	-.260	-.186	-.244	-.225	.345	.413
SIZE	-2628	-1982	-2396	8399	6566	7167	.194
NMAJ	9.12	7.60	-4.85	21.51	23.73	27.78	.289
PVOC	-.343	-.296	-.081	-.286	-.189	.698	.438
PGRAD	.149	.072	.056	.126	.103	.039	.114
SAT	222	142	35	124	78	872	.256

*Not significant at .05

Table 3

Standardized Regression Coefficients for Selection Into Colleges

	College Characteristics									
	EXP	TTN	LSES	MIN	HT	SIZE	NMAJ	PVOC	PGRAD	SAT
FOCC	.014	.005	-.008	.011	.011	.035*	-.003	-.004	.012	.018
FAED	.045*	.054*	-.045*	-.035*	-.042*	.027	.061*	-.054*	.033*	.079*
MOED	.039*	.045*	.005	-.004	-.039*	-.025	-.003	-.018	-.005	.040*
INC	.020	.036*	-.079*	-.040*	.011	.037*	.033*	-.009	.002	.026*
BLACK	.097*	.081*	.210*	.335*	-.073*	.021	.026	-.078*	.063*	-.030*
CATH	-.017	.034*	-.015	.044*	.063*	.042*	-.021	-.022	.023*	.030*
JEW	.054*	.127*	-.038*	.011	.019	.092*	.001	-.062*	.067*	.106*
MALE	.051*	-.004	.014	.005	.013	.017	.004	.021	.050*	.010
ABIL	.124*	.148*	-.152*	-.118*	-.155*	.067*	.050*	-.140*	.094*	.216*
HSGPA	.117*	.019	-.007	.000	-.090*	.073*	.125*	-.103*	.092*	.123*
HSPGM	-.022	-.089*	.080*	.019	.053*	-.013	-.015	.114*	-.035*	-.068*
ACSC	.015	.009	.029*	.018	-.015	.007	-.005	-.009	-.010	-.004
EDEXP	.020	.002	-.012	.006	-.012	.012	.031*	-.035*	-.004	.036*
OCASP	.019	.029*	-.033*	.003	-.013	.019	.024*	-.008	.030*	.050*
PASP	.024*	.028*	-.006	.004	-.072*	.039*	.078*	-.064*	.033*	.036*
DELAY	-.008	-.028	-.003	.026	.098*	.001	-.034*	.039*	-.018	-.023*
R2	.078	.102	.086	.176	.110	.043	.056	.118	.040	.206

Table 4

Correlations of College Characteristics and Educational Outcomes and Unstandardized Dummy Regression of College Type and Educational Outcomes

	Educational Outcomes						
	P2	P3	P4	BA	GRAD	EDATT	ED79
EXP	.076	.106	.108	.142	.102	.153	.132
TIM	.087	.130	.137	.194	.108	.188	.153
LSES	-.052	-.080	-.097	-.107	-.066	-.099	-.076
MIN	-.033	-.051	-.058	-.094	-.032	-.085	-.032
HT	-.153	-.188	-.198	-.262	-.110	-.252	-.166
SIZE	.043	.082	.082	.073	.047	.081	.079
NMAJ	.081	.135	.137	.153	.068	.154	.113
PVOC	-.123	-.183	-.203	-.244	-.123	-.230	-.179
PGRAD	.067	.099	.111	.120	.081	.121	.097
SAT	.136	.186	.201	.249	.135	.242	.194
Unstandardized Regression Coefficients							
PRUNV	.167	.295	.306	.401	.173	.763	.947
PRCOL	.139	.226	.252	.310	.140	.584	.668
PRTWO	.022	.049	.046	.062	.036	.106	.130
PBUNV	.145	.230	.248	.272	.123	.554	.679
PBCOL	.106	.193	.210	.239	.099	.462	.478
A	.691	.499	.328	1.342	1.183	2.031	3.518
R2	.020	.041	.047	.072	.017	.069	.039

Table 5

Correlations of College Characteristics and Occupational Outcomes

and Unstandardized Dummy Regression of College Type and Occupational Outcomes

	Occupational Outcomes						
	OCC79	PAY	SEI	SUBORD	THINGS	PAPER	IDEAS
EXP	.060	.029	.083	.011	-.025	.004	.106
STN	.106	.020	.101	.006	-.060	.021	.018
LSES	-.035	-.032	-.085	.021	.034	-.025	-.031
MIN	-.017	-.011	-.063	.039	-.002	-.003	-.026
HT	-.106	-.004	-.129	.030	.066	-.012	-.050
SIZE	.036	.064	.073	.010	.000	-.002	.029
NMAJ	.066	.036	.087	-.031	-.021	.008	.024
PVOC	-.108	-.030	-.114	.003	.044	-.018	-.027
PGRAD	.041	.043	.069	.015	-.022	.016	.005
SAT	.120	.058	.157	-.002	-.049	.015	.035
Unstandardized Coefficients							
PRUNV	1.058*	.390*	9.630*	-.041	-.234*	.148*	.150*
PRCOL	.947	.051	5.843*	-.007	-.161*	.106*	.074*
PRTWO	.304	-.033	3.074*	-.079*	-.092	.048	.060
PBUNV	.679	.300*	6.070*	-.032	-.160	.080*	.115*
PBCOL	.527	.029	5.404*	-.061	-.112*	.074*	.066*
A	9.813	5.926	48.736	2.959	3.019	3.105	3.137
R2	.016	.002	.018	.001	.004	.002	.003

Table 6

Correlations of College Characteristics and Role Involvement

With Unstandardized Dummy Regression of College Type and Role Involvement

	MS	HRS	CAMPUS	FTPT
Unstandardized Coefficients				
PRUNV	-.085	-8.244*	.491*	.120*
PRCOL	-.078	-7.046*	.469*	.119*
PRTWO	-.058	-2.622*	.195*	.043*
PBUNV	-.027	-7.056*	.299*	.114*
PBCOL	.005	-5.930*	.339*	.103*
A	1.145	12.694	.089	1.853
R2	.000	.051	.125	.034
Bivariate Correlations				
EXP	-.011	-.120	.218	.084
TIN	-.019	-.136	.259	.099
LSES	.006	.040	-.115	-.027
MIN	-.008	.048	-.118	-.029
HT	.002	.267	-.383	-.283
SIZE	.004	-.033	-.003	.013
NMAJ	.003	-.131	.161	.099
PVOC	.018	.174	-.257	-.136
PGRAD	-.003	-.082	.126	.064
SAT	-.017	-.183	.267	.113

Table 7

Net Effects of Colleges and Role Involvement on Academic Performance and Integration

	GPA			FAC			CSAT		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Unstandardized coefficients									
PRUNV	-.265*	-.110	-.113	.060*	.021	.013	.048	.063	.052
PRCOL	-.257*	-.138	-.135	.092*	.054*	.042	.039	.041	.025
PRTWO	.004	.045	.042	.089*	.061*	.060*	.103*	.090*	.087*
PBUNV	-.351*	-.232*	-.226*	-.047*	-.040	-.048*	-.037	-.047	-.055
PBCOL	-.238*	-.152	-.148*	-.013	-.018	-.029	-.021	-.030	-.042
Standardized Coefficients									
EXP	-.013	-.013	-.013	.006	.009	.005	.003	.006	.002
TTN	.042*	.026	.026	.056*	-.001	-.002	-.023	-.027	-.028
LSES	.042*	.042*	.043*	.008	.004	.002	.011	.008	.007
MIN	.031*	.034*	.034*	-.016	-.013	-.010	-.014	-.012	-.008
HT	.044*	.025	.018	-.046*	-.050*	-.025	-.037*	-.042*	-.026
SIZE	.034*	.035*	.033*	-.092*	-.090*	-.078	-.001	.001	.010
NMAJ	-.028*	-.013	-.012	.012	.023	.015	-.032*	-.027	-.020
PVOC	.052*	.024	.025	.029*	.014	.012	.014	-.000	-.001
PAPAD	-.006	-.002	-.002	-.031*	-.029*	-.029*	-.034*	-.034*	-.034*
SAT	-.024	-.019	-.020	-.011	-.002	-.007	.000	.006	.000
MS			.007			.003			.002
HRS			-.004			-.019			-.015
FTPT			-.054*			-.047*			-.005
CAMPUS			.002			.070*			.069*
R2 Controls only	.183			.031			.031		
R2	.192	.198	.200	.041	.051	.057	.034	.036	.041
	(.196)			(.048)			(.035)		

Table 8

Net Effects of Colleges, Role Involvement, and College Experiences on Educational Attainment of College Entrants

	P2				BA			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unstandardized Coefficients								
PRUNV	.031	.006	-.020	-.021	.190*	.044	.023	.025
PRCOL	.048*	.027	-.011	-.012	.169*	.043	.010	.012
PRTWO	.010	-.010	-.017	-.023	-.101*	-.034	-.039	-.046
PBUNV	.055*	.029	.010	.015	.134*	.041*	.023	.036
PBCOL	.039*	.015	-.015	-.011	.140*	.056*	.029	.037*
Standardized Coefficients								
EXP	-.019	-.019	-.032*	-.032*	-.023*	-.026*	-.035*	-.034*
TTN	-.027	-.023	-.026	-.025	.023	.026	.023	.021
LSES	.011	.011	.007	.005	.041*	.039*	.035*	.030*
MIN	.015	.015	.025*	.025*	-.018	-.020	-.011	-.014
HT	-.064*	-.057*	.008	.010	-.100*	-.088*	-.035*	-.034*
SIZE	-.025	-.026	.008	.010	-.037*	-.034*	-.006	-.006
NMAJ	.005	-.001	-.024	-.023	.045*	.027	.008	.009
PVOC	-.002	.009	.006	.005	-.051*	-.034*	-.037*	-.040*
PGRAD	.023	.002	.002	.005	.005	.003	.003	.006
SAT	.038*	.037*	.019	.020	.036*	.034*	.019	.022
MS			-.028*	-.029*			-.008	-.009
HRS			-.051*	-.050*			-.056*	-.054*
FTPT			.055*	.055*			.055*	.058*
CAMPUS			.233*	.227*			.174*	.167*
GPA				.026*				.104*
FAC				.036*				.052*
CSAT				.055*				.038*
R2 Controls only	.112				.196			
R2	.114	.117	.172*	.178*	.213	.222*	.256*	.272*
	(.117)				(.220)			

Table 8 (Continued)

Net Effects of Colleges, Role Involvement, and College Experiences on Educational Attainment of College Entrants

	EDATT				GRAD			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unstandardized Coefficients								
PRUNV	.301*	.077	.034	.040	.066	-.004	-.012	-.009
PRCOL	.281*	.081	.014	.019	.072*	.018	.006	.009
PRTWO	-.061	-.062	-.071	-.087	.029	.004	.002	-.004
PBUNV	.225*	.100*	.058*	.089*	.050*	.029	.023	.034
PBCOL	.248*	.120*	.062	.082*	.049*	.032	.022	.030
Standardized Coefficients								
EXP	-.005	-.007	-.017	-.016	.020	.019	.015	.016
TTN	.026	.035	.032	.030	.025	.039	.038	.035
LSES	.048*	.046*	.041*	.035*	.000	-.001	-.003	-.009
MIN	-.011	-.013	-.004	-.008	.008	.008	.011	.007
HT	-.088*	-.075*	-.013	-.013	-.019	-.008	.014	.014
SIZE	-.029*	-.026	.004	.005	-.003	-.006	.006	.005
NMAJ	.046*	.026	.005	.007	.008	-.000	-.008	-.007
PVOC	-.033*	-.013	-.016	-.020	-.022	-.011	-.012	-.015
PGRAD	.003	-.000	.000	.004	.014	.013	.013	.016
SAT	.013	.011	-.006	-.003	.003	.004	-.002	.000
MS			-.012	-.013			-.014	-.015
HDS			-.074*	-.071*			-.029*	-.027*
FTPT			.078*	.082*			.023	.027*
CAMPUS			.183*	.175*			.068*	.063*
GPA				.131*				.121*
FAC				.063*				.049*
CSAT				.040*				.026*
R2 Controls only		.230				.063		
R2	.212	.249	.293	.317	.066	.068	.074	.092
	(.247)				(.067)			

Table 8 (Continued)

Net Effects of Colleges, Role Involvement, and College Experiences on Educational Attainment of College Entrants

	ED79				OCC79			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unstandardized Coefficients								
PRUNV	.350*	.226*	.190*	.200*	.269*	.130	.082	.092
PRCOL	.273*	.165*	.111	.120	.366*	.245	.179	.189
PRTWO	.069	.030	.021	.002	.173	.109	.098	.071
PBUNV	.171*	.033	.005	.043	.112	.106	.073	.122
PBCOL	.199*	.078	.034	.059	.137	.107	.054	.086
Standardized Coefficients								
EXP	.007	.008	.003	.004	-.020	-.020	-.023	-.023
TTN	.031*	-.002	-.004	-.006	.039*	.025	.024	.023
LSES	.022	.019	.017	.012	.036*	.034*	.032*	.029*
MIN	.008	.007	.012	.008	.009	.009	.013	.011
HT	-.025	-.020	.008	.007	-.012	-.005	.013	.013
SIZE	.002	.007	.022	.022	-.007	-.007	.002	.002
NMAJ	.024	.017	.007	.008	.016	.013	.006	.007
PVOC	-.028*	-.023	-.025	-.028	.001	.007	.006	.004
PGRAD	-.003	-.005	-.005	-.003	-.010	-.011	-.011	-.009
SAT	.017	.018	.011	.014	.022	.024	.019	.020
MS			.002	.001			.009	.009
HRS			-.018	-.017			-.024*	-.022
FTPT			.028*	.032*			-.003	-.000
CAMPUS			.100*	.095*			.065*	.063*
GPA				.116*				.076*
FAC				.055*				.033*
CSAT				.012				.024*
R2 Controls only	.154				.100			
R2	.159	.160	.171	.187	.102	.104	.109	.116
	(.160)				(.104)			

Table 9

Net Effects of Colleges, Role Involvement, and College Experiences on Occupational Attainment of College Entrants

	SEI				PAY			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unstandardized Coefficients								
PRUNV	3.392*	1.997	1.727	1.356	.134	.200	.173	.172
PRCOL	1.834*	.625	.212	.128	-.058	.058	.030	.043
PRTWO	2.207	1.299	1.245	1.694	-.012	.077	.061	.051
PBUNV	1.834*	.728	.522	.225	.204	.137	.137	.164
PBCOL	2.428*	1.438	1.084	.704	-.054	-.085	-.101	-.086
Standardized Coefficients								
EXP	-.008	-.008	-.010	-.002	-.010	-.007	-.009	-.008
TIN	.013	.007	.005	-.005	.011	.004	.004	.004
LSES	.011	.008	.008	-.010	.000	.006	.002	-.000
MIN	-.003	-.003	-.000	.000	.007	.006	.008	.006
HT	-.044*	-.036*	-.022	-.012	.021	.023	.022	.023
SIZE	.014	.015	.023	.021	.049*	.049*	.050*	.048*
NMAJ	.002	-.005	-.009	-.010	-.009	-.005	-.006	-.005
PVOC	.011	.014	.013	.022	-.003	.002	.002	.002
PGRAD	.002	-.001	-.001	-.002	.013	.011	.012	.012
SAT	.031*	.026	.023	.023	.025	.023	.022	.023
MS			.005	.008			-.004	-.004
HRS			.001	.027*			.014	.016
FTPT			.013	-.014			-.030*	-.027*
CAMPUS			.058*	-.013			.030*	.025
GPA				.036*				.047*
FAC				-.009				-.012
CSAT				.027*				.029*
EDATT				.027*				-.022
BA				.229*				.042*
R2 Controls only		.099				.036		
R2	.101	.103*	.106*	.197*	.036	039*	.041	.045*
	(.102)				(.039)*			

Table 9 (Continued)

Net Effects of Colleges, Role Involvement, and College Experiences on Occupational Attainment of College Entrants

	SUBORD				THINGS			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unstandardized Coefficients								
PRUNV	-.026	-.095	-.089	-.081	-.122*	-.016	-.008	-.003
PRCOL	.008	-.030	-.021	-.014	-.096*	.007	.005	.000
PRTWO	-.074	-.085	-.079	-.072	-.086	-.029	-.028	-.043
PBUNV	-.012	.005	.004	.003	-.039	-.005	-.002	.007
PBCOL	-.054*	-.025	-.021	-.020	-.068*	-.035	-.023	-.015
Standardized Coefficients								
EXP	.009	.008	.009	.009	.015	.025	.027	.012
TTN	.001	.021	.019	.020	-.012	-.012	-.010	-.004
LSES	-.004	-.001	-.002	.001	.026	.028	.028	.038*
MIN	.000	-.001	-.001	-.002	-.030*	-.030*	-.033*	-.032*
HT	.032*	.029	.031	.028	.052*	.049*	.038*	.034*
SIZE	.001	-.001	-.001	-.004	.031	.031	.026	.029
NMAL	-.023	-.023	-.023	-.024	-.011	-.008	-.004	-.004
PVOC	-.007	-.004	-.004	-.004	-.015	-.015	-.015	-.019
PGRAD	.016	.018	.018	.016	-.003	-.002	-.002	-.000
SAT	.032	.031	.029	.028	-.001	-.002	.001	.001
MS			.011	.010			-.008	-.009
HRS			-.040*	-.045*			.023	.021
FTPT			-.004	.003			.010	.022
CAMPUS			-.023	-.008			-.038*	-.004
GPA				.006				-.046*
FAC				-.034*				.027*
COLSAT				-.037*				-.005
EDATT				-.060*				-.106*
BA				.007				-.085*
R2 controls only	.020					.016		
R2	.021	.023*	.025	.030*	.018	.020	.022	.048*
	(.022)				(.020*)			

Table 9 (Continued)

Net Effects of Colleges, Role Involvement, and College Experiences on Occupational Attainment of College Entrants

	PAPER				IDEAS			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Unstandardized Coefficients								
PRUNV	.084	.244*	.241*	.230*	.085*	.186*	.178*	.165*
PRCOL	.050	.192*	.187*	.180*	.034	.106	.093	.085
PRTWO	.046	.115	.114	.119*	.070	.084	.080	.076
PBUNV	.018	.110*	.108*	.100*	.069*	.082	.078	.079
PBCOL	.037	.118*	.114*	.106*	.038	.051	.042	.038
Standardized Coefficients								
EXP	-.006	-.003	-.004	-.001	.004	-.001	-.003	-.001
TTN	.007	-.037	-.036	-.039	-.002	-.032	-.033	-.036
LSES	-.025	-.031*	-.030*	-.035*	-.011	-.013	-.013	-.021
MIN	.010	.009	.010	.012	.003	-.004	-.002	-.001
HT	.007	.026	.029	.035*	-.045*	-.033*	-.026	-.020
SIZE	-.019	-.015	-.013	-.012	.032	.035	.039*	.041*
NMAJ	.005	-.007	-.008	-.008	-.024	-.029	-.030	-.030
PVOC	.010	.026	.026	.030	.010	.022	.022	.025
PGRAD	.018	.012	.012	.012	-.015	-.020	-.020	-.017
SAT	-.019	-.017	-.016	-.018	-.011	-.012	-.013	-.013
MS			.025*	.026*			-.013	-.012
HRS			.015	.024			.011	.024
FTPT			.012	.002			.003	-.011
CAMPUS			.018	-.007			.041*	.003
GPA				-.019				.016
FAC				.002				.036*
CSAT				.027*				.064*
EDATT				.050*				.101*
BA				.078*				.066*
R2 controls only			.036				.021	
R2	.037	.039*	.040	.051*	.021	.023	.025	.051*
	(.037)				(.022)			

Table 10

Total and Net Effects of Student Background on College Experiences

(Standardized Coefficients)

	GPA			FAC			CSAT		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
FOCC	-.001	-.003	-.003	.009	.009	.008	-.018*	-.013	-.013
FAED	.001	.009	.011	-.020	-.019	-.021	.018	.017	.013
MOED	.010	.012	.012	.010	.007	.003	.027*	.021	.017
INC	.022	.025*	.024	.040*	.041*	.040*	-.011	-.008	-.008
MALE	-.102*	-.104*	-.103*	-.053*	-.051*	-.048*	-.093*	-.089*	-.086*
BLACK	-.036*	-.048*	-.048*	-.095*	-.092*	-.095*	.022	.025	.020
CATH	.037*	.035*	.035*	-.025*	-.020	-.018	-.009	.002	.004
JEW	.039*	.038*	.039*	-.024*	-.021	-.022	-.007	.003	.000
ABIL	.144*	.169*	.171*	-.107*	-.109*	-.109*	-.013	-.013	-.015
HSGPA	.273*	.238*	.289*	.073*	.076*	.071*	.037*	.043*	.036*
HSPGM	.003	-.010	-.012	-.009	-.011	-.007	-.027*	-.028*	-.022
EDEXP	.007	.011	.013	-.019	-.018	-.018	.025*	.027*	.025*
ACSC	.075*	.073*	.075*	.102*	.100*	.099*	.058*	.057*	.054*
OCASP	-.022*	-.018	-.016	-.017	-.015	-.016	-.033*	-.031*	-.033*
PASP	-.006	.003	.006	.051*	.053*	.051*	.044*	.046*	.041*
DELAY	.104*	.097*	.084*	.009	.012	.011	-.064*	-.059*	-.048*
R2	.183	.198*	.200*	.031	.050	.057*	.031	.036*	.041*

Table 11

Total and Net Background Effects on Educational Outcomes

(Standardized Coefficients)

	22			BA			EDATT		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
FOCC	.021	.023	.022	-.013	-.011	-.011	-.002	-.001	.011
FAED	.016	.014	.004	.071*	.061*	.075*	.078*	.071*	.060*
MOED	.019	.016	.001	.047*	.040*	.027*	.047*	.040*	.025*
INC	.012	.015	.010	.022	.025*	.020	.012	.015	.010
MALE	.016	.018	.038*	.005	.008	.035*	.019	.021*	.054*
BLACK	.034*	.026*	.019	.039*	.024*	.020	.043*	.024*	.020
CATH	.004	.007	.014	.010	.015	.018	.022*	.027*	.029*
JEW	.020	.025*	.018	.064*	.062*	.053*	.074*	.073*	.062*
ABIL	.017	.009	.006	.081*	.060*	.044*	.099*	.079*	.058*
HSGPA	.107*	.100*	.069*	.192*	.171*	.122*	.198*	.181*	.121*
HSPGM	-.097*	-.084*	-.066*	-.107*	-.093*	-.076*	-.102*	-.092*	-.073*
EDEXP	.[illegible]	.013	.012	.040*	.036*	.033*	.052*	.050*	.045*
ACSC	.063*	.062*	.045*	.034*	.033*	.012	.057*	.056*	.031*
OCASP	.053*	.052*	.050*	.055*	.051*	.051*	.071*	.068*	.067*
PASP	.060*	.055*	.042*	.094*	.078*	.066*	.103*	.090*	.075*
DELAY	-.158*	-.153*	-.141*	-.080*	-.065*	-.059*	-.077*	-.065*	-.056*
R2	.112	.117	.178*	.196	.222*	.272*	.230	.249*	.317*

Table 11 (continued)

Total and Net Background Effects on Educational Outcomes

(Standardized Coefficients)

	GRAD			ED79			OCC79		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
FOCC	-.019	-.019	-.018	.010	.010	.010	.022	.023	.023
FAED	.029	.024	.021	.067*	.061*	.055*	.056*	.054*	.051*
MOED	.025	.022	.016	.052*	.048*	.040*	.029*	.026*	.021
INC	.013	.012	.011	-.017	-.016	-.020	-.020	-.020	-.023
MALE	.012	.011	.034*	.016	.015	.037*	-.157*	-.155*	-.139*
BLACK	.026*	.014	.009	.121*	.106*	.106*	.068*	.057*	.057*
CATH	.029*	.028*	.027*	.030*	.030*	.029*	.023*	.022	.022
JEW	.062*	.055*	.048*	.039*	.034*	.027*	.022	.019	.015
ABIL	.043*	.029*	.027	.148*	.135*	.116*	.098*	.096*	.085*
HSGPA	.126*	.118*	.112*	.111*	.098*	.054*	.091*	.089*	.059*
HSPGM	-.029*	-.021*	-.012	-.081*	-.074*	-.065*	-.049*	-.047*	-.041*
EDEXP	.052*	.052*	.048*	.058*	.055*	.052*	.029*	.028*	.027*
ACSC	.025*	.025*	.008	.065*	.064*	.047*	.042*	.044*	.030*
OCASP	.042*	.039*	.041*	.075*	.073*	.074*	.061*	.060*	.062*
PASP	.065*	.059*	.052*	.074*	.066*	.059*	.048*	.045*	.040*
DELAY	-.020	-.016	-.019	-.009	-.003	-.004	.003	.006	.000
R2	.063	.068	.092*	.154	.161*	.187*	.101	.104	.116*

Table 12

Total and Net Background Effects on Occupational Outcomes

(Standardized Coefficients)

	SEI			PAY			SUBORD		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
FOCC	.040*	.040*	.040*	-.001	-.001	-.004	.004	.004	.003
FAED	-.006	-.010	-.034*	-.007	-.007	-.009	.008	.007	.010
MOED	.015	.013	-.004	-.011	-.011	-.013	-.001	-.001	.002
INC	.039*	.039*	.030*	.056*	.056*	.049*	-.033*	-.033*	-.032*
MALE	-.073*	-.073*	-.077*	.173*	.173*	.176*	-.021	-.022	-.021
BLACK	.004	.000	-.001	.024	.023	.026	.093*	.095*	.092*
CATH	.018	.019	.008	.029*	.028*	.022	.030*	.026*	.026*
JEW	.050*	.046*	.020	.020	.019	.009	.034*	.028*	.030*
ABIL	.076*	.064*	.032*	-.003	-.005	-.016	.008	.003	.003
HSGPA	.116*	.109*	.028	.057*	.055*	.033*	-.020	-.021	-.008
HSPGM	-.024	-.021	.031	-.020	-.019	-.016	.006	.009	.004
EDEXP	-.013	-.014	-.027*	.006	.005	.007	-.002	-.002	-.001
ACSC	.054*	.054*	.031*	.029*	.029*	.023	-.069*	-.069*	-.059*
OCASP	.102*	.099*	.080*	-.032*	-.032*	-.032*	.059*	.058*	.059*
PASP	.045*	.041*	.007	-.003	-.004	-.006	-.021	-.019	-.012
DELAY	-.032*	-.027*	-.007	-.025*	-.025	-.038*	.011	.008	.003
R2	.099	.103	.197*	.036	.039*	.045*	.020	.023	.030*

Table 12 (continued)

Total and Net Background Effects on Occupational Outcomes

(Standardized Coefficients)

	THINGS			PAPER			IDEAS		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
FOCC	.003	.002	.002	.020	.021	.021	.023	.023	.023
FAED	-.019	-.016	-.004	-.039*	-.038*	-.045*	-.003	-.003	-.013
MOED	.004	.008	.015	-.006	-.005	-.009	-.005	-.006	-.015
INC	-.033*	-.032*	-.028*	.019	.019	.017	.020	.020	.014
MALE	-.011	-.017	-.015	-.163*	-.163*	-.166*	-.002	-.001	.002
BLACK	-.028*	-.018	-.019	.004	.005	.005	-.030*	-.030*	-.026
CATH	-.031*	-.036*	-.029*	.038*	.037*	.035*	.031*	.032*	.028*
JEW	-.061*	-.062*	-.048*	.007	.010	.003	-.010	-.008	-.018
ABIL	-.002	.003	.025	.007	.010	.008	-.050*	-.055*	-.064*
HSGPA	-.018	-.014	.032*	.030*	.031*	.012	.069*	.068*	.025
HSPGM	.016	.010	-.005	-.011	-.010	.000	-.025	-.024	-.007
EDEXP	.016	.016	.023	.004	.005	.001	.008	.008	.002
ACSC	-.027*	-.027*	-.017	.041*	.044*	.036*	.092*	.093*	.074*
OCASP	-.041*	-.039*	-.029*	.046*	.046*	.040*	.000	-.001	-.007
PASP	-.039*	-.035*	-.020	.026	.026*	.015	.008	.007	-.012
DELAY	.007	.004	-.001	.002	-.000	.011	-.026*	-.023	-.014
R2	.016	.020*	.048*	.036	.037	.049*	.021	.023	.050*

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